

Administration of Asthma / C.O.P.D Medications

Accreditation

- The content of this telehealth presentation has been approved for CNE and RT CE credit.
- Measures have been taken by the Utah Department of Health, Bureau of Health Promotion, to ensure there is no conflict of interest in this activity.

Who Am I?

- **Max Eskelson, RRT, BSBA, MSHCA**
- **Respiratory Therapist x 41 years**
- **Adult Critical Care**
- **NIH as research coordinator (ARDSNet)**
- **Aeromedical transport X 20 years (LifeFlight)**
- **Currently, Director of Clinical Education**
 - **Stevens Henager College**

Objectives

- **This presentation cannot describe every inhaler in the market place**
 - **At least 71 different inhalers**
 - **Ideas and concepts presented here are generic**

Objectives

At the end of this presentation, the participant:

- **Will be able to efficiently and effectively use their Metered Dose Inhaler (MDI).**



Objectives

At the end of this presentation, the participant:

- **Will understand how to use a '*SPACER*' effectively.**



- **Will understand the mechanics of a 'Dry Powder Inhaler' (DPI).**



Objectives

At the end of this presentation, the participant:

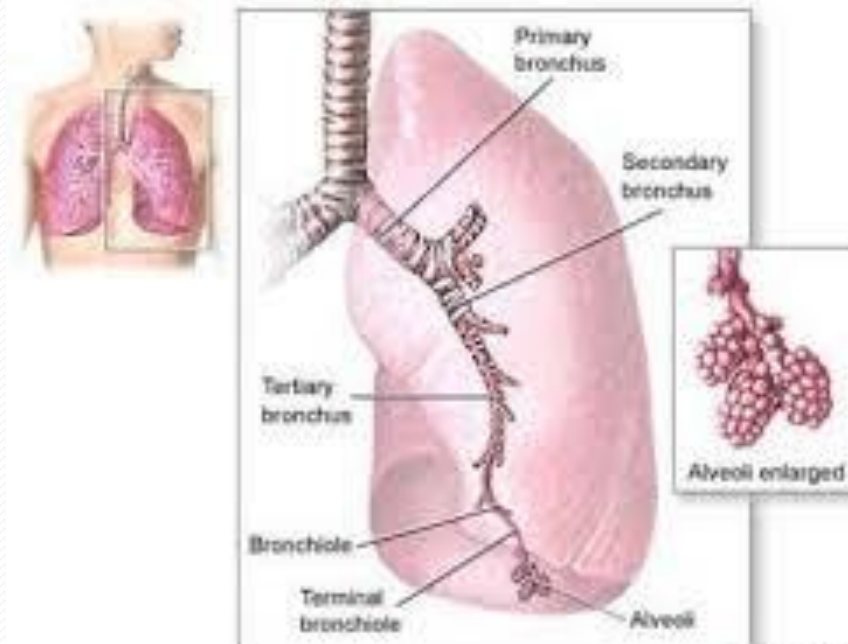
- **Will understand why a rescue inhaler should be kept in their pocket or purse at all times.**



- **Will understand the economic and physiologic advantages of using their devices correctly.**

Why Inhalation?

- Inhalation therapy is a very effective method of drug administration because the bronchioles and alveoli have a rich blood supply as well as a large surface area.



Why the Inhalation Route?

- Most inhaled medications begin their effects immediately



- Aerosol therapy delivers the medication to the immediate site of action with few systemic adverse effects



Why Inhalation?

- **Basic premise:**
 - **SITE SPECIFIC (straight to the site – i.e. lungs)**
 - **Because it goes straight to the site:**
 - **Faster onset**
 - **Avoids 1st pass metabolism**
 - **Less medication required**
 - **With less medication, fewer side effects**

Why Inhalation?

- Easy
- Convenient
- Cost effective



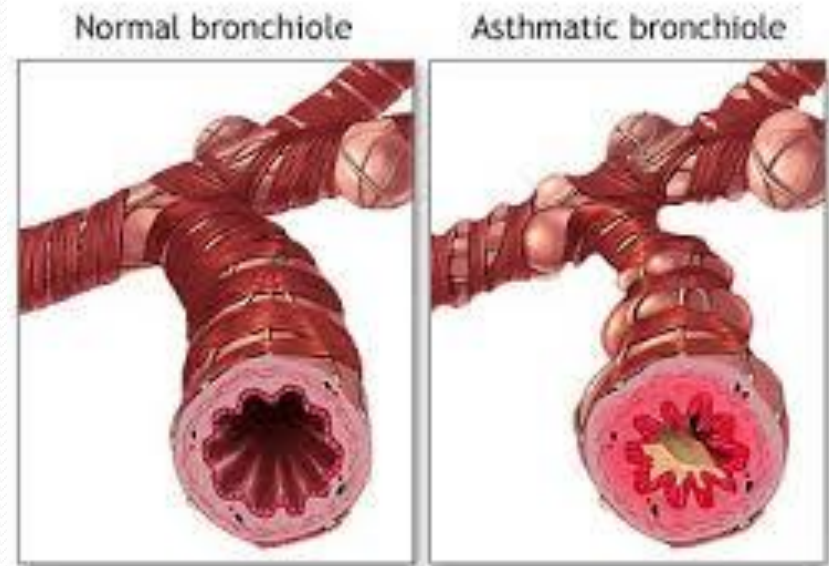
Medication Basics

Two main groups:

- **Rescue Medications**
 - **Short Acting Beta Agonists (SABA)**
- **Maintenance Medications**
 - **Long Acting Beta Agonists (LABA)**
 - **Long Acting Beta Agonists (LABA) + Inhaled Corticosteroid (ICS)**

Rescue Medications

- The most-prescribed quick-relief medicines are quick-acting bronchodilators (*usually* single medications) which '*relax*' the tightened muscles around inflamed airways.



Rescue Medications

- The most common of these usually work within minutes to provide temporary relief of symptoms.
- You should always have your rescue medications with you *'just in case'*.

Rescue Meds and Boating

When boating:

- **You should always have rescue equipment with you; however.....**
- **If you are doing things correctly, you should not have to use it.**

The same concepts hold true for Rescue Medications:

- **You should always have rescue equipment with you; however.....**
- **If you are using your maintenance / controlling medications correctly, you should not have to use it.**

Rescue Medications

- If disease is under control with maintenance medications, their use should be sporadic and limited / infrequent.
- Increased use of a rescue MDI is
 - A signal that maintenance medications may not be dosed properly, or.....
 - The patient's disease state has changed (i.e. an Upper Respiratory Infection) and a visit to your physician is warranted

Example of Rescue Medications

- Albuterol (Proventil, Ventolin, ProAir HFA)



Inhaled Steroids

- **Glucocorticoids are adrenocortical steroid hormones, and are the most potent natural anti-inflammatory substances known**



- **Inhaled forms produce fewer side effects than oral glucocorticoids**

Examples of Inhaled Steroids



Maintenance Medications

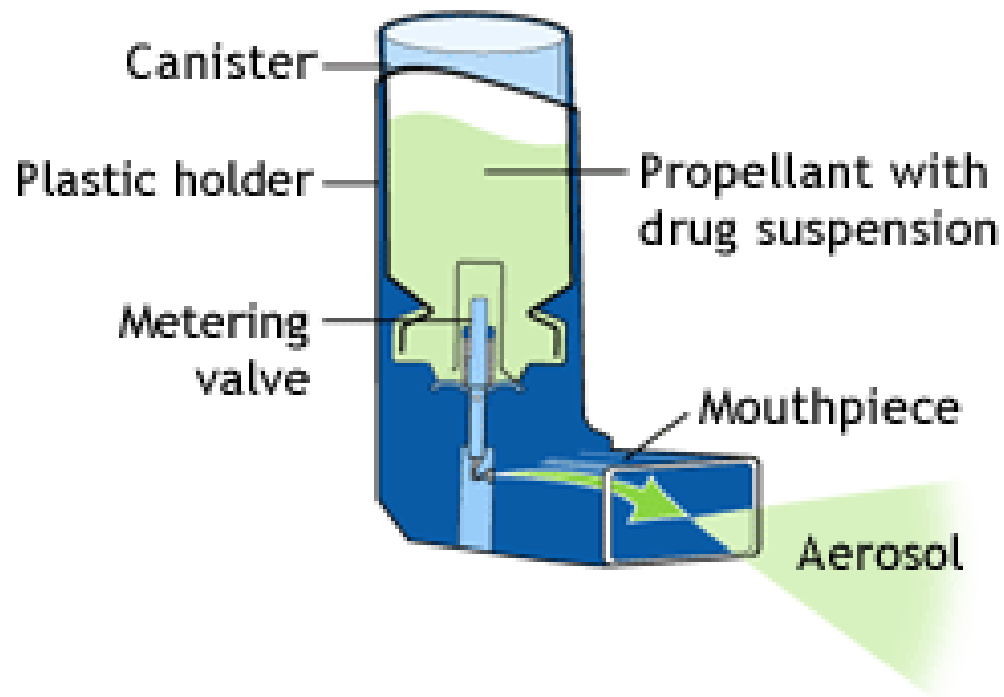
- Used to control symptoms if a patient is in a stable state.
- Can be single medications or combination medications



Combination Controlling Therapy

- **Combination controller therapy involves the addition of a second long-term control medication to inhaled corticosteroid therapy**
- **Common combination products include fluticasone with salmeterol (Advair) and budesonide with formoterol (Symbicort)**
- **Combination therapy is more effective than higher-dose inhaled corticosteroids alone for reducing symptoms of persistent asthma**

MDI



Problems When Using an MDI

- **Scenario:**

- The patient is wheezing, uses an MDI but does not get the medication; therefore, no relief.
- The patient then increases the number of inhalations still with no medication delivered.

- **Problem:**

- Incorrect positioning of MDI or
- Poor coordination or
- The MDI is empty.

Solution



Spacers Are Easy to Use



Spacers

- Correct term is '*Valved Holding Chamber*'
- A plastic tube with one-way valves and an anti static coating
- Goal is to move MDI spray away from the mouth
- The Anti-Static coating hold the medication in an '*Aerosol Cloud*' until inspiration occurs

Alternate to MDI Spacer?

- **Question:**
 - What is another way to utilize an MDI without a spacer (one that does NOT have a built-in spacer)?

- **Trick question**
 - **There is NO other way to utilize an MDI other than a spacer**



Spacers

- Goal is to have smooth breath *'in'*
 - Too rapid and you will have inertial impaction in the back of the mouth, resulting in less medications getting to the site.
- Can be used with any MDI
 - Some new MDIs' have built in spacers
- One way valves, so can't blow the medication away
- An opening to place MDI
- Mouthpiece
- Whistle / inspiratory flow indicator
 - If inspiratory flow is too great, will get harmonica sound
 - Extra points are not granted for making the spacer sound!!

Caring for Your Spacer

- Take the MDI adapter (the rubber back piece that lets the MDI fit in) off the spacer.
- Soak the adapter and the spacer in lukewarm water with mild dish detergent.
- Gently shake parts so soapy water can get into all the parts.
- Rinse both parts in clean water.



Caring for Your Spacer

- **Shake off excess water. DO NOT use a towel.**
 - You will remove the anti-static coating that keeps the medication in suspension
- **Stand the spacer up in an upright position and let it air dry.**
- **Put the adapter back onto the spacer when both parts are completely dry.**
- **Do not wash your spacer in a dishwasher.**

Advantages Disadvantages

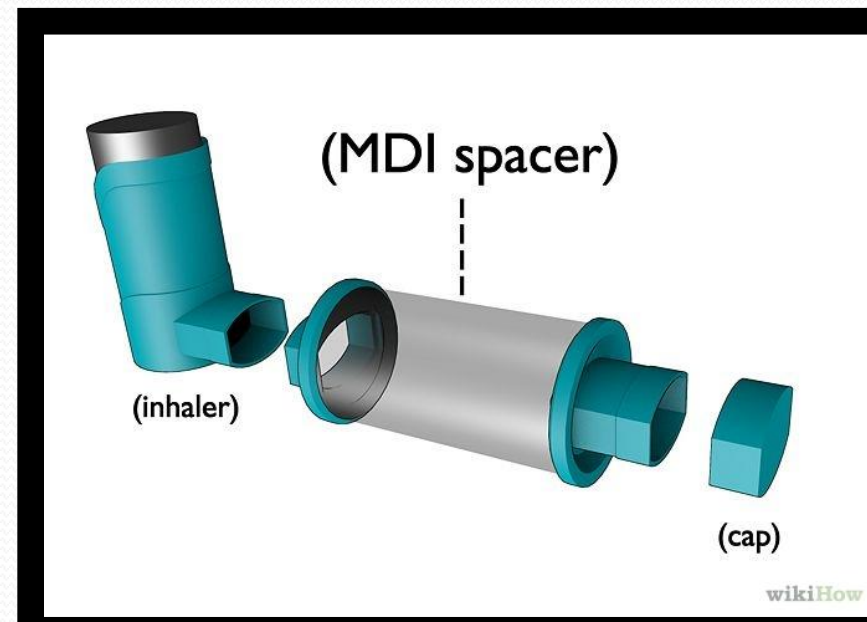
- **Small size, portable, unobtrusive**
- **Require propellants**
- **Quick to use**
- **Convenient Drug delivery (highly dependent on good inhaler technique)**
- **More than 100 doses available**
- **Usually inexpensive**
- **Pressurization of contents protects against moisture and bacteria**

Advantages Disadvantages

- Possible to get no drug in lungs with very bad technique
- Most products have low lung deposition
- Most products have high oropharyngeal deposition
- Difficult to deliver high doses

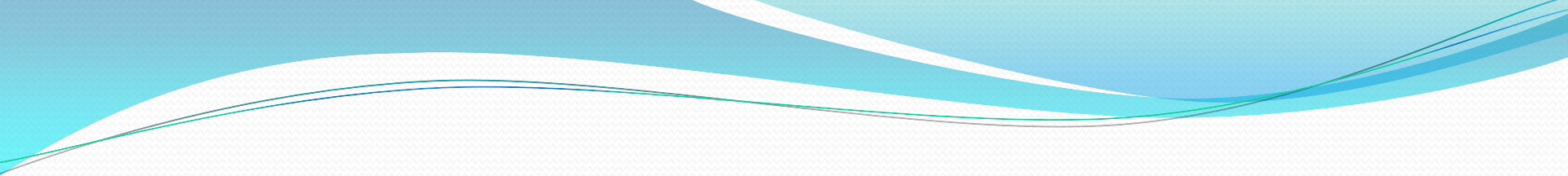
Using an MDI

- **Develop a process**
 - Easy to do, easy to remember
- **Prime (spray a few puffs away from your body) if new MDI or if it has not been utilized for a period of time**



Using an MDI

- **Shake the MDI**
 - **Why do we shake it?**
 - **To mix the content**
 - **What happens if we DON'T shake it?**
 - **May only get propellant**
- **Place MDI into spacer (opposite mouth piece)**
- **Remove the mouth cap**
- **Exhale easily into the room**
- **Teeth on the mouthpiece, lips closed softly on mouthpiece**
- **Squeeze the MDI (push the “button”)**
- **Breath in slowly and deeply, with breath hold if you can**
 - **NOT fast and hard**
- **If second breath is indicated, wait one minute**
 - **Why?**
- **Repeat above steps**

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- **Similar to an MDI except that the medication is in powder form**
 - **No CFC – environmentally friendly**
 - **Breathe in slowly, like an MDI. If you breathe in fast, oropharyngeal impaction and deposition occurs**

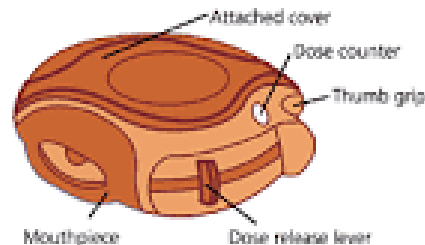
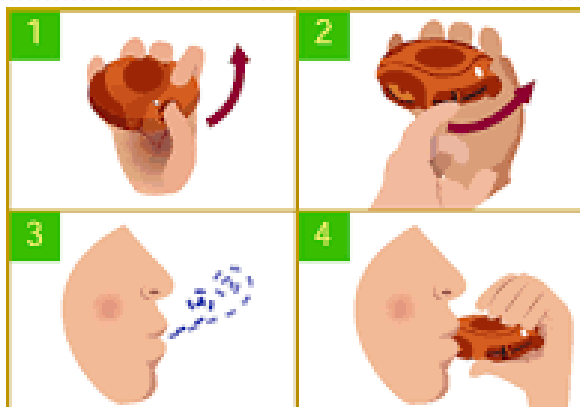
DPI

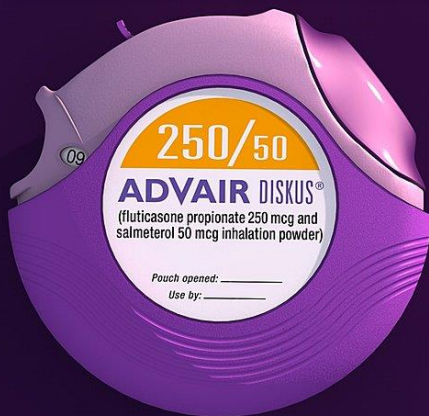
- **Is breath actuated**
 - **The concept of a breath-actuation is a good one, because it solves the problem of patient coordination of actuation with inhalation**

DPI

- **Dry Powder Inhalers**

- DPIs' have similar inner working
- The medication is in a strip (blisters)
- When you open the container, it advances the strip
- When you cock it, the blister pack is punctured



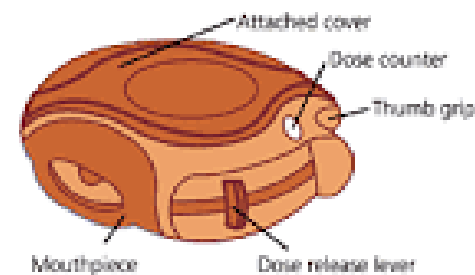
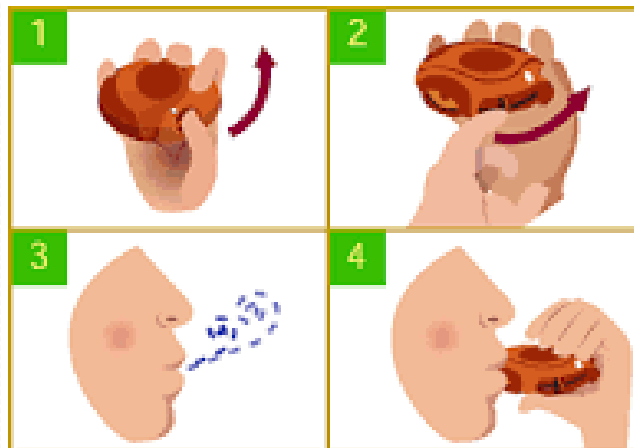


Using the DPI

- Establish a routine
 1. Look at the counter (note the number of doses left)
 2. Hold the device level
 3. Open the device
 1. This moves the medication strip one place
 4. “Cock It”
 1. This punctures the blister
 5. Keep the device level

Using the DPI

1. Blow easily into the room
2. Teeth on the mouthpiece
3. Lips around the mouthpiece
4. Breath in slowly and deeply



Specific Instruction re: Inhaled Corticosteroids (ICS)

- **We know that one reason to use medications inhaled is that we decrease systemic absorption**
- **Our mouth is highly vascular**
- **Items in our mouths are quickly absorbed**
- **Therefore, it is important to rinse and spit following administration of an ICS**
- **Problems:**
 - **Oral fungal infection**
 - **Decreased Bone Mineral Density**

Summary (for therapists)

- Know the medications in you formulary
- Become familiar with the doses and
- Which doses for what patient population
- Understand the mechanics of the devices
- Ensure your patients with an MDI utilize a spacer
- Educate till the cows come home!

Summary

- Watch the counter on your medication
 - Refill before you run out
- Establish a routine
 - When and how
- Use a spacer
 - Clean it periodically
- If your MDI has set for a protracted period, prime it per instructions



Summary

- Use the minimum inspiratory flow (Inhale slowly)
 - To decrease mouth and throat impaction.
- Use the correct medications (rescue or maintenance) at the right times in the correct dose.
- If you are needing to use more medicine, but feel no response, contact your physician.





Questions?